AMENDMENTS TO THE CLAIMS

1-62. (Canceled)

63. (New) A polishing apparatus comprising:

a top ring for holding a workpiece;

a rotating polishing table having a polishing surface which is brought in sliding contact with the workpiece;

a pulsed light source energizing at a sampling time;

a light transmission unit provided in said polishing surface, wherein said top ring is controlled such that said light transmission unit passes across a center of the workpiece;

a light-emitting unit for applying light from said pulsed light source to a surface, being polished, of the workpiece;

a light-receiving unit for receiving reflected light reflected from the surface of the workpiece and transmitted through said light transmission unit;

a spectroscope unit for dividing the reflected light received by said light-receiving unit into a plurality of light rays having respective wavelengths;

light-receiving elements for detecting the light rays divided by said spectroscope unit, wherein each of said light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information; and

a control unit for controlling said pulsed light source to energize when said pulsed light source faces the center of the workpiece.

64. (New) A polishing apparatus according to claim 63, further comprising:

a position sensor mounted on the outer circumferential edge of said polishing table for detecting a rotation angle of said polishing table by detecting a dog which represents a reference position.

65. (New) A polishing apparatus according to claim 64, wherein an interval of the sampling time and a next sampling time of said pulsed light source corresponds to the sampling

period of said light-receiving elements.

66. (New) A polishing apparatus according to claim 65, wherein said control unit controls said pulsed light source to start energizing said pulsed light source as a sampling start time, based on the following equation,

$$t_S = \frac{\theta}{\omega_T} - \left(nT + \frac{T+S}{2} \right)$$

wherein:

t_S represents a sampling start time;

θ represents a rotation angle when said position sensor detects the reference position;

ω_T represents an angular velocity of said polishing table;

n represents a number of sampling points from a workpiece center line, which interconnects the center of said polishing table and the center of the workpiece, to a workpiece edge except for a sampling point on the workpiece center line;

T represents the sampling period of said light-receiving elements; and

S represents a time after the releasing of the electrical information of a first one of said light-receiving elements until the releasing of the electrical information of a last one of said light-receiving elements.

67. (New) A polishing apparatus comprising:

a top ring for holding a workpiece;

a rotating polishing table having a polishing surface which is brought in sliding contact with the workpiece;

a continuous light source;

a light transmission unit provided in said polishing surface, wherein said top ring is controlled such that said light transmission unit passes across a center of the workpiece;

a light-emitting unit for applying light from said continuous light source to a surface, being polished, of the workpiece;

a light-receiving unit for receiving reflected light reflected from the surface of the workpiece and transmitted through said light transmission unit;

a spectroscope unit for dividing the reflected light received by said light-receiving unit into a plurality of light rays having respective wavelengths;

light-receiving elements for detecting the light rays divided by said spectroscope unit, wherein each of said light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information; and

a control unit for controlling said light-receiving elements so that said light transmission unit faces the center of the workpiece at a sampling time of said light-receiving elements, wherein the sampling time represents a half of a time after a first one of said light-receiving elements starts storing electrical information until a last one of said light-receiving elements releases electrical information.

68. (New) A polishing apparatus according to claim 67, further comprising:

a position sensor mounted on the outer circumferential edge of said polishing table for detecting a rotation angle of said polishing table by detecting a dog which represents a reference position.

69. (New) A polishing apparatus according to claim 67, wherein said control unit calculates a number of sampling points based on the following equation,

$$\alpha - \omega_T T \leqq n\omega_T T + \omega_T \frac{T+S}{2} < \alpha$$

wherein:

α represents a half of an angle at which said light transmission unit scans the surface of the workpiece;

ω_T represents an angular velocity of said polishing table;

n represents a number of sampling points from a workpiece center line, which interconnects the center of said polishing table and the center of the workpiece, to a workpiece edge except for a sampling point on the workpiece center line;

T represents the sampling period of said light-receiving elements; and

S represents a time after the releasing of the electrical information of said first light-receiving element until the releasing of the electrical information of said last light-receiving element.

70. (New) A polishing apparatus according to claim 67, wherein said control unit is capable of adjusting the sampling period of a sampling process performed by said light-receiving elements based on a rotational speed of said polishing table.

71. (New) A polishing apparatus according to claim 67, wherein said light source emits light having a wavelength band.

72. (New) A method of polishing a workpiece, the method comprising:

holding a workpiece by a top ring;

rotating a polishing table having a polishing surface so as to be in sliding contact with the workpiece;

energizing a pulsed light source at a sampling time;

controlling said top ring such that a light transmission unit provided in said polishing surface passes across a center of the workpiece;

applying light from said pulsed light source to a surface, being polished, of the workpiece by a light-emitting unit;

receiving reflected light reflected from the surface of the workpiece and transmitted through said light transmission unit by a light-receiving unit;

dividing the reflected light received by said light-receiving unit into a plurality of light rays having respective wavelengths by a spectroscope unit;

detecting the light rays divided by said spectroscope unit by light-receiving elements, wherein each of said light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information; and

controlling said pulsed light source by a control unit to energize when said pulsed light

source faces the center of the workpiece.

73. (New) A method according to claim 72, further comprising:

detecting a rotation angle of said polishing table by detecting a dog which represents a reference position using a position sensor mounted on the outer circumferential edge of said polishing table.

74. (New) A method according to claim 73, wherein an interval of the sampling time and a next sampling time of said pulsed light source corresponds to the sampling period of said light-receiving elements.

75. (New) A method according to claim 74, wherein said control unit controls said pulsed light sourced to start energizing said pulsed light source as a sampling start time, based on the following equation,

$$t_S = \frac{\theta}{\omega_T} - \left(nT + \frac{T+S}{2} \right)$$

wherein:

t_S represents a sampling start time;

θ represents a rotation angle when said position sensor detects the reference position;

ω_T represents an angular velocity of said polishing table;

n represents a number of sampling points from a workpiece center line, which interconnects the center of said polishing table and the center of the workpiece, to a workpiece edge except for a sampling point on the workpiece center line;

T represents the sampling period of said light-receiving elements; and

S represents a time after the releasing of the electrical information of a first one of said light-receiving elements until the releasing of the electrical information of a last one of said light-receiving elements.

76. (New) A method of polishing a workpiece, the method comprising:

holding a workpiece by a top ring;

rotating a polishing table having a polishing surface so as to be in sliding contact with the workpiece;

controlling said top ring such that a light transmission unit provided in said polishing surface passes across a center of the work piece;

applying light from a continuous light source to a surface, being polished, of the workpiece by a light-emitting unit;

receiving reflected light reflected from the surface of the workpiece and transmitted through said light transmission unit by a light-receiving unit;

dividing the reflected light received by said light-receiving unit into a plurality of light rays having respective wavelengths by a spectroscope unit;

detecting the light rays divided by said spectroscope unit by light-receiving elements, wherein each of said light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information; and

controlling said light-receiving elements by a control unit so that said light transmission unit faces the center of the workpiece at a sampling time of said light-receiving elements, wherein the sampling time represents a half of a time after a first one of said light-receiving elements starts storing electrical information until a last one of said light-receiving elements releases electrical information.

77. (New) A method according to claim 76, further comprising:

detecting a rotation angle of said polishing table by detecting a dog which represents a reference position using a position sensor mounted on the outer circumferential edge of said polishing table.

78. (New) A method according to claim 76, wherein said control unit calculates a number of sampling points based on the following equation,

$$\alpha - \omega_T T \leqq n\omega_T T + \omega_T \frac{T+S}{2} < \alpha$$

wherein:

α represents a half of an angle at which said light transmission unit scans the surface of the workpiece;

ω_T represents an angular velocity of said polishing table;

n represents a number of sampling points from a workpiece center line, which interconnects the center of said polishing table and the center of the workpiece, to a workpiece edge except for a sampling point on the workpiece center line;

T represents the sampling period of said light-receiving elements; and

S represents a time after the releasing of the electrical information of said first light-receiving element until the releasing of the electrical information of said last light-receiving element.

79. (New) A method according to claim 76, wherein said control unit is capable of adjusting the sampling period of a sampling process performed by said light-receiving elements based on a rotational speed of said polishing table.

80. (New) A method according to claim 76, wherein said light source emits light having a wavelength band.